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NOTES ON THE IDENTITY OF *NYCHIA* STÅL (HEMIPTERA-HETEROPTERA: NOTONECTIDAE) IN AUSTRALIA

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ABSTRACT

The following synonyms are made after re-examination of the relevant described species of the genus *Nychia* Stål: *N. marshalli* var *atavia* Hale, 1925 and *N. malayana* Lundblad, 1933 with *N. marshalli* var *sappho* kirkaldy, 1901 which is raised to species status as *N. sappho* Kirkaldy; distribution, Malaya, Indonesia (Sumatra and Java), New Guinea and 'northern' Australia.

KEYWORDS: taxonomy, Notonectidae, *Nychia*, Australia.

INTRODUCTION

Nychia Stål was first recognised in Australian collections by Hale (1925) who listed and described the aquatic and semi-aquatic Hemiptera collected by the Swedish Scientific Expedition to Australia, 1910-1913. Hale commented that although he was treating the Australian *Nychia* as representing an extreme or atavic variety of the widely distributed *Nychia marshalli* (Scott), a critical examination of a series of *marshalli* might prove that var *atavia* was a distinct species.

SYSTEMATICS

Genus *Nychia* Stål

Nychia Stål, 1859: 268 (type species *N. limpida* Stål, 1859, by monotypy).
Antipalocoris Scott, 1872: 243-245 (type species *A. marshalli* Scott, 1872, by monotypy; syn. by Kirkaldy 1899: 9).

Nychia is a small genus of at least two, possibly four species. Two lengthy account have appeared, Hutchinson (1929) and Lundblad (1933). The former treated all *Nychia* as *N. limpida* Stål *s. l.* whereas Lundblad recognised the following species and one variety of *Nychia:*

*Nychia limpida*Stål China
Nychia infuscata Paiva Burma
Nychia marshalli (Scott) Africa, Corsica and doubtfully Sri Lanka
Nychia marshalli var *atavia* Hale Australia
Nychia malayana Lundblad Sumatra and Java.

Although *Nychia* superficially resembles *Anisops* Spinola (Anisopinae) the genus belongs to the subfamily Notonectinae *(Notonecta* Linnaeus *Enithares* Spinola and *Martarega* B. White).

Nychia definition. Hemelytral commissure continuous, i.e. without a hair-lined pit near the apex of the scutellum. Eyes meeting along the posterior inner margins and clearly overlapping the anterior margin of the pronotum. Prominent groups of hairs lying along the base of the rostrum. Antero-lateral margins of the pronotum foveate. Middle femora with two prominent spines. Two sclerotised asymmetrical projections arising from the base of the phallosoma.

Nychia limpida Stål
(Fig. 1)

Nychia limpida Stål, 1859: 268-269 (described as a corixid); Lundblad 1933: 148- 151; Poisson 1957: 147.

Holotype, sex uncertain in Stockholm, examined. Stål's description based on a single specimen from Wampoa, Whampoa Island, Canton, China. The type is in poor condition, both front legs, one middle and hind leg, most of the elytra and all the abdomen are missing; one middle and hind leg remain attached to the thorax. The remnants of Stål's type are distorted and fragile. The loss of the front legs and abdomen precludes any realistic comparison with species described subsequently. It is therefore inpractical to propose *N. limpida* as a prior name for species des-

cribed post 1859. The relationship of *limpida* to other species of *Nychia* must remain speculative until additional material is available from mainland China. The head and pronotum of *limpida* as shown in Fig. 1, the Type figured in Stål's description is a brachypterous specimen. The species treated by Hutchinson (1929) as *Nychia limpida* refers to the following species.

Nychia marshalli (Scott)
(Figs 2-6)

Antipalocoris marshalli Scott, 1872: 244.
Nychia limpida Stål - Hutchinson 1929: 409-415 (extensive bibliography).
Nychia marshalli - Lundblad 1933: 155-157 (extensive bibliography); Poisson 1957: 145-147.

Type series, Corsica in British Museum (Natural-History), examined.

Generic name *Antipalocoris* first used by Marshall (1872) immediately prior to Scott's description. Marshall described *Antipalocoris* as abundant in a river (Gravone) swimming like fish in shoals against the current with *Anisops niveus* Auctts = *Anisops sardea* Herrich-Schaffer. Marshall arriving back in France from Corsica during the Franco-Prussian war, graphically describes how part of the Hemiptera collection he had made was destroyed by either Sailors or Porters during a hiatus over his travelling without a passport!

Hutchinson (1929) and Poisson (1957) give synopses of previous records which clearly show that only one species *(N. marshalli)* is found throughout Africa and the mediterranean basin. Hutchinson divided *Nychia* into macropterous and brachypterous groups. The macropterous form is easily recognised by the development of the elytra. Hutchinson and Poisson figured the brachypterous form. Hutchinson recognised three variants of the macropterous form and four of the brachypterous. Distant (1910) repeated Scott's description and included figures of Scott's co-types (brachypterous form, female). Hutchinson figured the male front leg and genitalia, there is a brief description of the female genitalia. Poisson also figured *marshalli* from the type locality, comparing it with *marshalli* from Ethiopia and the 'Congo'. I have dissected males from various localities in Africa and find they are identical with those figured by Hutchinson and Poisson. The asymmetrical lateral diverticula were first described by Hutchinson, these structures are not found in any other genera of the Notonectidae, Truxal (1952).

Male genitalia: Aedeagus constricted medianly, lightly sclerotised (Fig. 2). Asymmetrical lateral diverticula lightly sclerotised (Figs 3,4). Parameres asymmetrical, right paramere tapering distally (Fig. 5), left paramere short, distally blunt (Fig. 6).

Nychia infuscata Paiva

Nychia infuscata Paiva, 1918: 28; Lundblad 1933: 149 (listed with brief discussion).

Type series, mostly in alcohol according to Paiva (1918), in the Collections of Zoological Survey of India, Type No. given as 7098/H.1. not examined.

The status of *N. infuscata* is ambiguous. The species was described almost entirely on colour characters from a series of specimens collected from the 'marginal zone' Inle Lake, Yawnghwc State, Burma, 2-3. iii. 1917. Paiva's description referred to four-segmented antennae as did Scott (1872, *N. marshalli*) this is presumed to be an error. Paiva commented on the presence of a small number of specimens with a black spot near the middle of 'each hemelytra'.

Hutchinson (1929) relegated *infuscata* to subspecific status within *limpida* sensu Hutchinson and made *N.. marshalli* var *atavia* a synonym of *infuscata* within '*limpida*'.

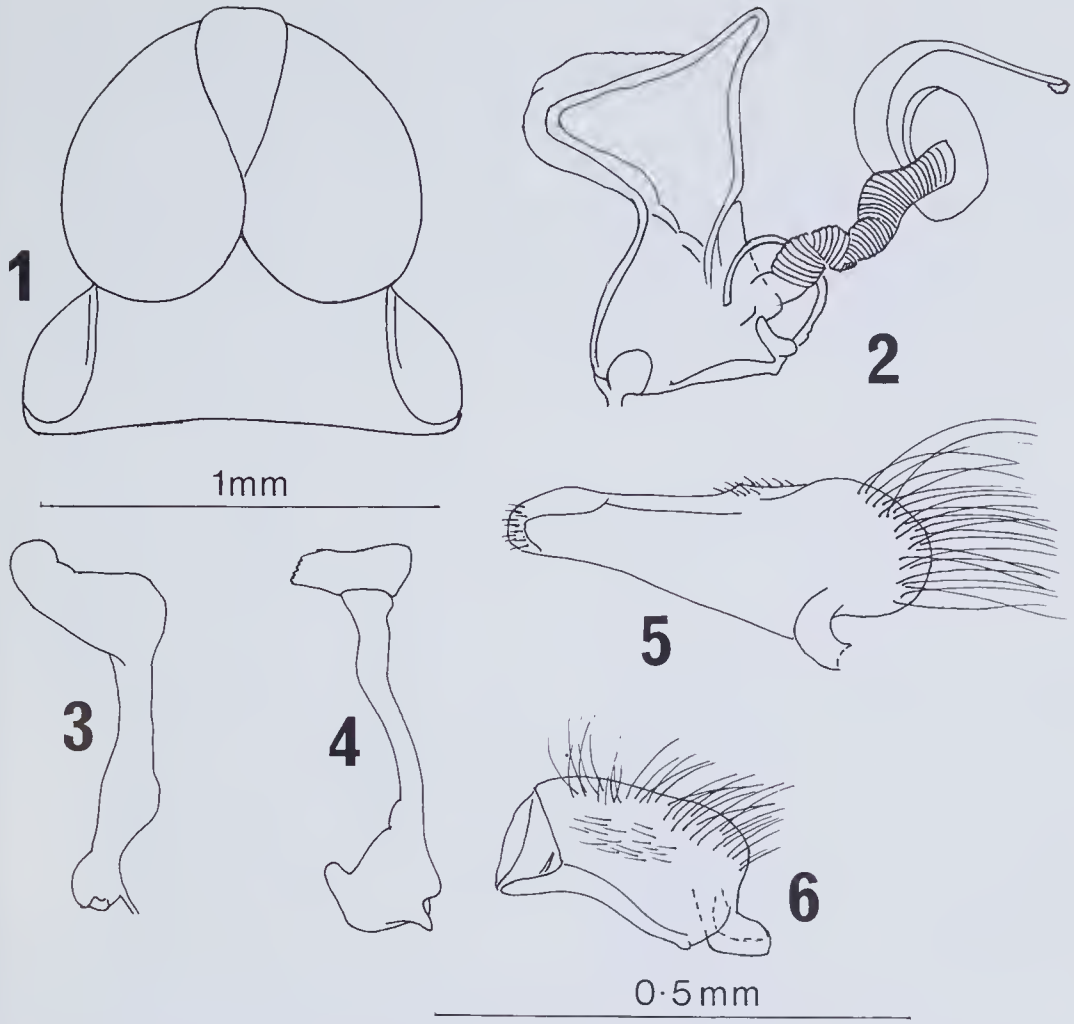
It has not been possible to see any specimens of *infuscata* from Burma for comparison with Australian material.

Nychia malayana Lundblad

Nychia malayana Lundblad, 1933: 148-155.

Type series from Sumatra and Java in Stockholm, not examined.

Lundblad in the preamble to the description of *N. malayana* gives a resume of



Figs 1-6. *Nychia* spp.: **1**, *limpida* holotype head and pronotum from above; **2-6**, *marshalli* ♂: **2**, aedeagus; **3-4**, lateral diverticula; **5**, right paramere; **6**, left paramere.

the various names used by previous workers for *limpida* and *marshalli*. His figures of the head, front leg and genitalia clearly shows that *malayana* is distinct from *marshalli*, the latter which is figured for comparison. Lundblad refers to part of the type series of *malayana* as *'sappho-Exemplare'*.

Kirkaldy (1901) briefly described *Nychia marshalli* var *sappho* from South New Guinea, Rigo, July 1889, L. Loria, as a form with a black spot on the 'interolateral margin of the corium near the middle'. Kirkaldy also referred to a macropterous specimen (he figured the hemelytra) which lacked the black spot. He suggested that the macropterous form was 'structurally distinct', but commented that he had not been able to work out the differences in the species of *Nychia* from the dried material he had.

Comparison of a series of *Nychia* from various localities in the Northern Territory and Northern Queensland with specimens of *malayana* from Malaya and Hale's type of var *atavia* with Lundblad's description shows that they are all conspecific. As Kirkaldy had proposed the name var *sappho* for *Nychia* from New Guinea and Lundblad used the varietal name *sappho* for part of the type series of *malayana*, the correct name for the Australasian *Nychia* now becomes *N. sappho* Kirkaldy.

Nychia sappho Kirkaldy, stat. nov.
(Figs 7-21)

Nychia marshalli var *sappho* Kirkaldy, 1901: 809-810.
Nychia marshalli var *atavia* Hale, 1925: 17-19. Syn. nov.
Nychia malayana Lundblad, 1933: 148-155. Syn. nov.

Type material. HOLOTYPE - ♂, *Nychia marshalli* var. *atavia* Hale, N.W. Austr., Kimberley district, Mjoberg, in Stockholm. Type series of *Nychia malayana* Lundblad, in Stockholm. Location of type series of *Nychia marshalli* var. *sappho* Kirkaldy, unknown.

Additional material. NORTHERN TERRITORY: 1♀ brachypt. (brachypterous), McMinns Lagoon near Darwin, I. Lansbury, 4-16 May 1979; 1♀ macropt. (macropterous), Koongarra Creek near mining camp, (macropterous), I. Lansbury, 8-10 May 1979; 9♂, 7♀, macropt., 3♀ brachypt., Koongarra 'borrow pit', I. Lansbury, 9 May 1979; 2♂, 6♀, brachypt., 4♀ with black spot, Kadadu National Park, billabong near Nourlange Rock, I. Landsbury, 10 May 1979; 5♂, 13♀, macropt., 2♂, brachypt., Robin Falls, I. Lansbury, 15 May 1979; 1♂, 2♀, macropt., Stapleton Creek, I. Lansbury, 15 May 1979; 3♂, 1♀, brachypt., 1 ♀ with black spot., 5th instar nymphs, Coomalie Creek, I. Lansbury, 15 May 1979; 1♂, 2♀, 2 immature, Wildman River West Branch, I. Lansbury, 17 May 1979; 1♂, 3♀, macropt., 1 ♂, branchypt., Flying Fox Creek, I. Lansbury, 17 May 1979; 1 nymph, Jabiluka, Magela floodplain, 'Buffalo billabong' R. Tait, 13 November 1979; 1♂, 1♀ with black spot, brachypt., Jabiluka, Magela floodplain, 'Leichardt billabong', R Tait, 24 July 1979, QUEENSLAND: 1♂, macropt., Little Mitchell River, I. Lansbury, 22 May 1979, 1♂, brachypt., 1 nymph, Tinaroo Falls Dam, inlet just below 'Look Out Point', I. Lansbury. 23 May 1979.

Description. Males 4-4.2 mm long; females 4.3-4.7 mm long: width both sexes 1.1-1.3 mm.

Inner margin of eyes meeting posteriorly, lateral margins sinuate, hind margins overlapping the anterior margin of the pronotum (Fig. 7). Vertex produced between the eyes dorsally and depressed between the eyes above the labrum (Fig. 8). Pronotum transverse, fovea almost half the width of the disc. Male front leg (Fig. 11), tarsi two-segmented; Hutchinson (1929) states 'tarsi trimerous, basal joint minute'. Front tibia with a fringe of stout hairs basally, those of the tarsi more conspicuous. Female front leg (Fig. 13) tarsus one-segmented. Claws in both sexes of unequal length. Middle femora of both sexes (Figs 12, 14), femora with two stout spines, tibiae with distal fringe of stout pegs. Male tarsi appearing to be two-segmented, female one-segmented. Claws of unequal length. Hind legs very long, femora reaching or just surpassing the end of the abdomen (alcohol material). Femur longer than the tibia which is slightly longer than the tarsi, first tarsal segment about 2 x longer than the second segment, claws vestigial.

Antennae three segmented (Fig. 10), scape small, pedicel elongate with numerous bristles, third segment narrow with a series of distally spatulate hairs.

Hemelytra; macropterous form (Fig. 9), clavus usually hyaline with inner margin slightly thickened and pigmented. Infuscation of corium and membrance as shown.

Coxal plates covered with long silky hairs. Trochanter of hind legs conspicuously fringed with dark brown hairs. Second visible sternite bare; sternites 3 - 6 not carinate, narrowly flattened and fringed with dark brown hairs which gradually diverge posteriorly. Male seventh sternite distally more or less acuminate covering the genital segment with two groups of hairs arising from the posterior margin. Female seventh sternite not produced distally. Parallel hair fringes diverging and reaching the posterior margin. Sternite partially covering the genitalia, gonoplacs and part of the second gonocoxa exposed. Eighth paratergites elongate, distally turned inwards enclosing the genitalia.

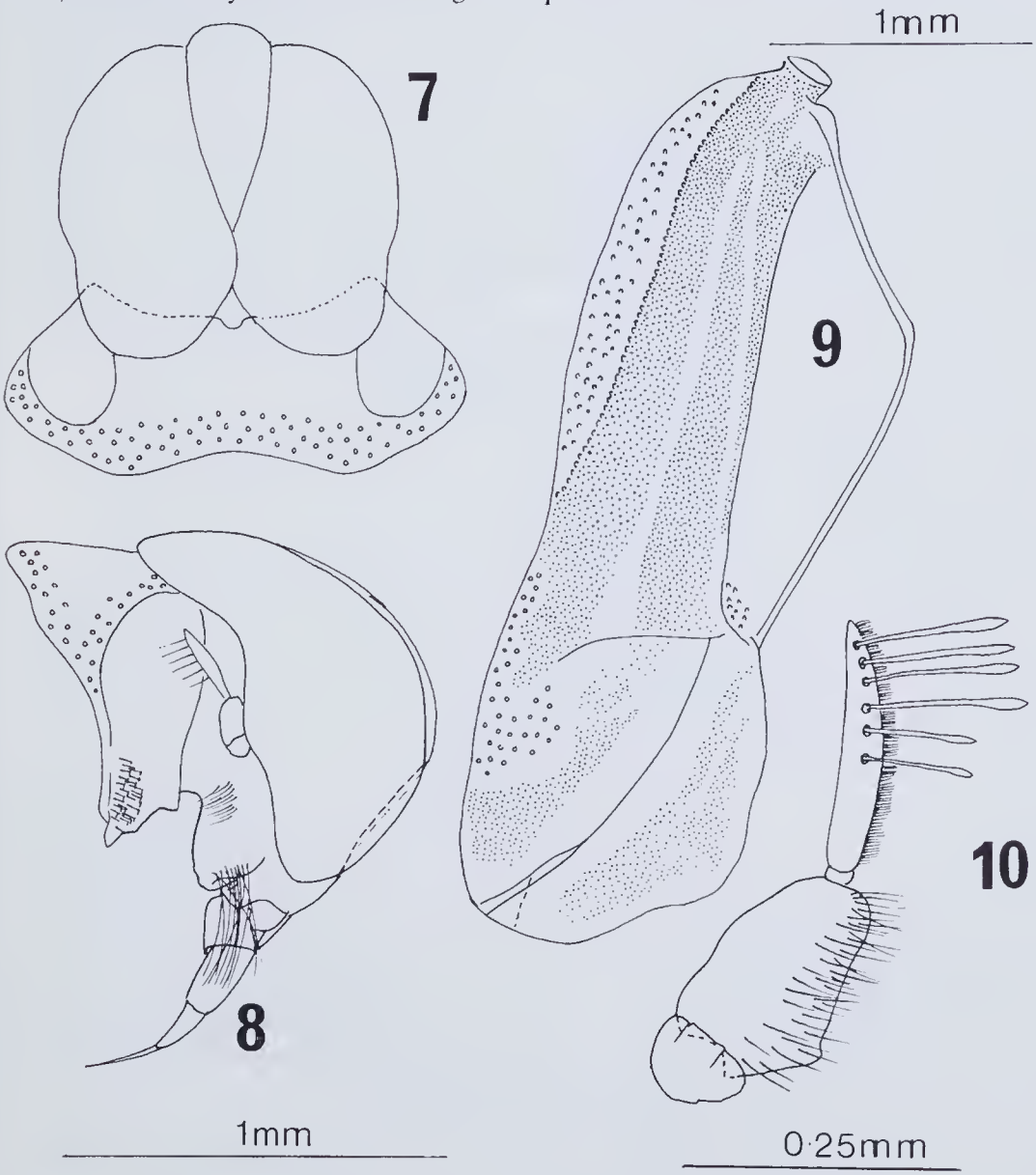
Male genitalia: Capsule elongate, posteriorly cleft, lateral margins sclerotised, distad ventrally with a prominent projection (Fig. 15). Aedeagus (Figs 16, 17), membranous, lateral diverticula basally attached to the phallosoma. The vesica originating about midway up the aedeagus, basally coiled and corrugated, terminating as a thin membranous tube. Right paramere (Fig. 18) distally blunt and spinose, left paramere (Fig. 19) rather more elongate.

Female genitalia (Figs 20, 21): Termin-

ology follows Scudder (1959). First gonocoxa elongate with a prominent apodeme anteriorly; first gonapophysis broad, the inner surface separated from the outer margin by a narrow lightly sclerotised 'border'. Lower inner margin with scattered hairs arising from sockets. Gonangulum lightly sclerotised and elongate, bluntly acuminate. Second gonocoxa thin and concave; in side elevation, acutely triangular, inner margin fringed with hairs, ramus barely visible. Second gonapophysis membranous and plate-like, basally broad, tapering apically. Gonoplacs large and stylus-like with numerous hairs. Single median spermatheca present.

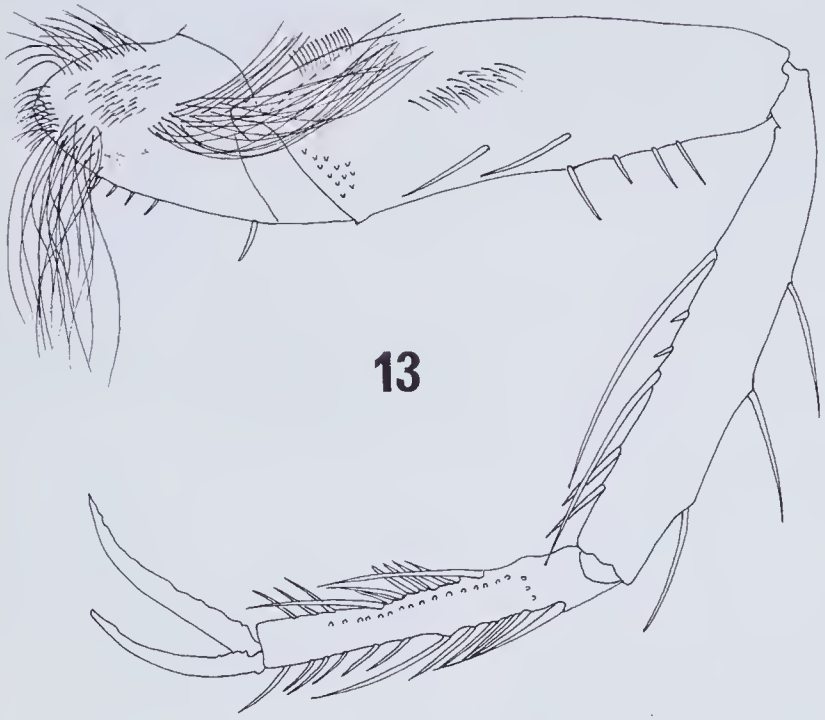
The lack of spinose projections on the first and'or second gonapophyses strongly suggests that *Nychia* eggs arc not inserted in plant tissue, but deposited on the substrate or plant material (detritus).

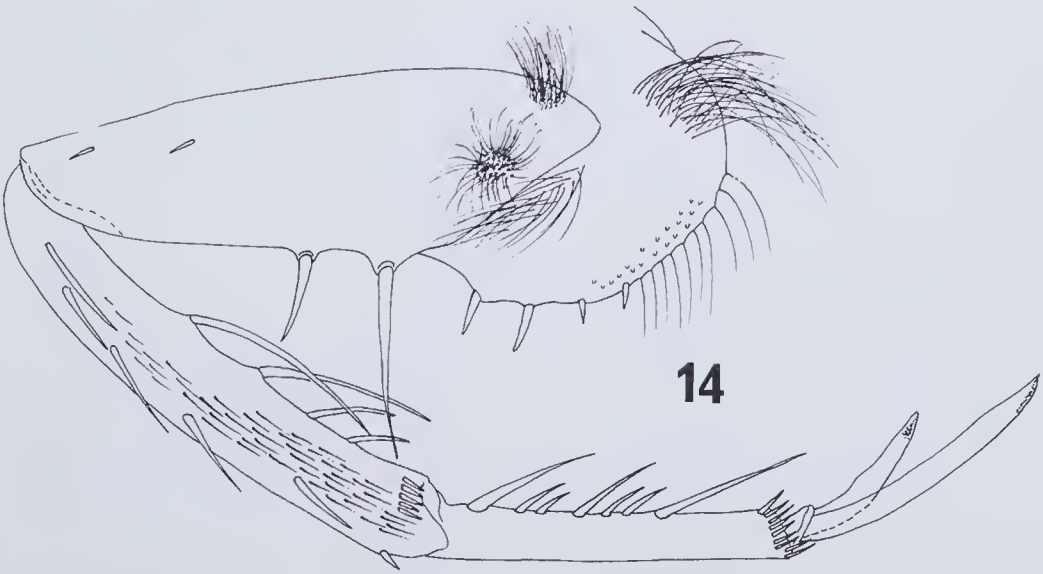
Nychia limpida limpida form *sappho* of Hutchinson (1929) does not belong to this species.



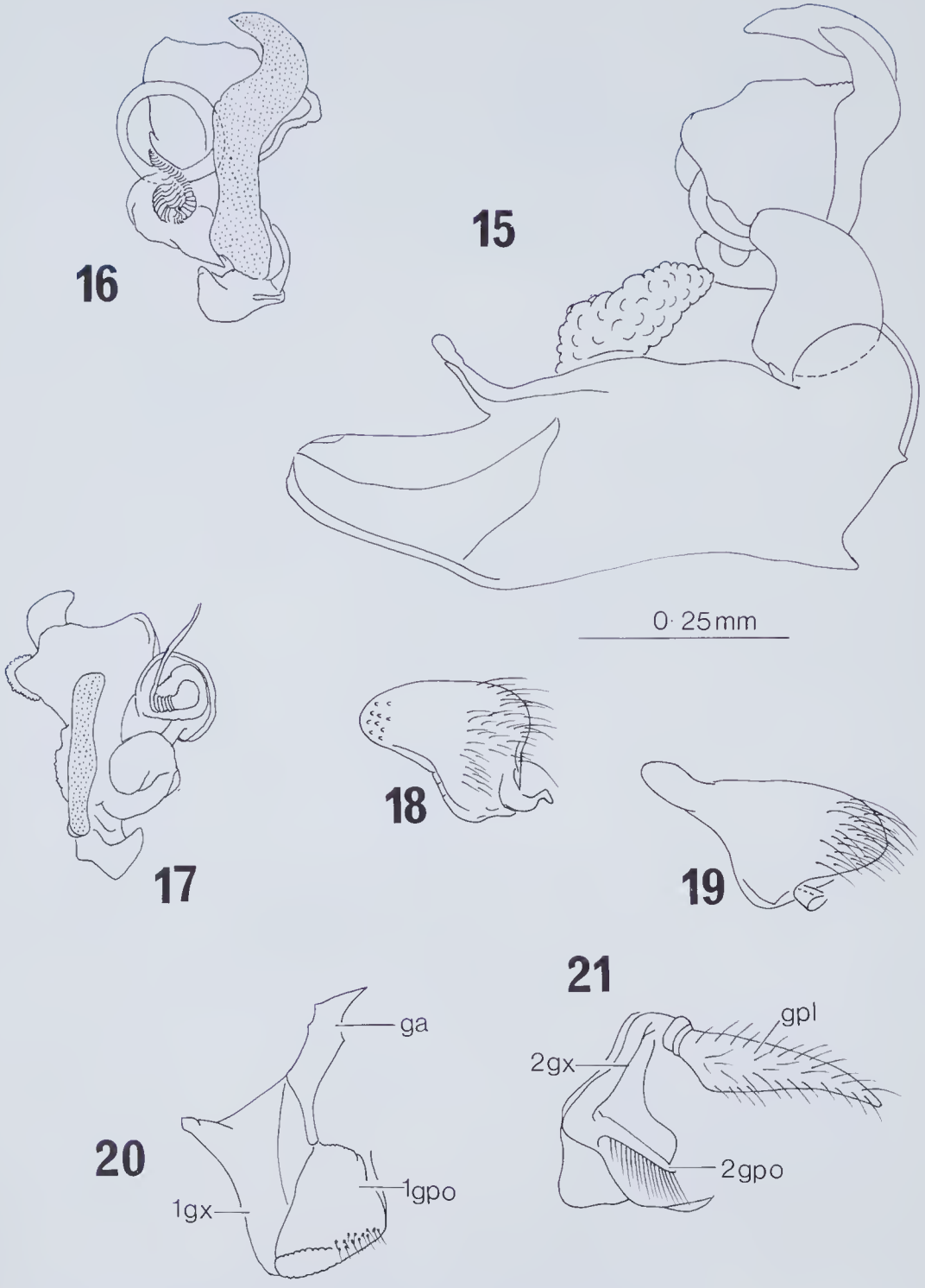
Figs 7-10. *Nychia sappho* ♂: **7**, head and pronotum from above; **8**, same, side view; **9**, hemelytra; **10**, antenna.

Figs 11-12. *Nychia sappho* ♂: **11**, front leg; **12**, middle leg.





Figs 13-14. *Nychia sappho* ♀: **13**, front leg; **14**, middle leg.



Figs 15-21. *Nychia sappho*: **15-19** ♂, **20-21** ♀: **15**, genital capsule; **16**, **17**, aedeagus, lateral diverticula stippled; **18**, right paramere; **19**, left paramere; **20**, 1st gonocoxa and associated structures; **21**, 2nd gonocoxa and associated structures. Abbreviations: **ga**, gonangulum; **gpl**, gonoplac; **1 gpo**, **2 gpo**, 1st and 2nd gonopophysis; **1 gx**, **2 gx**, 1st and 2nd gonocoxa.

NOTES

The taxonomy of *Nychia* is rather confused, Hutchinson (1929) concept of a monotypic genus with several forms was not followed by Lundblad (1933). The name *'sappho'* might be considered ambiguous as Kirkaldy (1901) appears to have applied it strictly to the brachypterous form from New Guinea with a black spot on the inner margin of the elytra.

Comparison of the chaetotaxy of the male front legs and the genitalia of the macropterous and brachypterous forms from the same habitat in Australia shows them to be identical. As *malayana* is identical with the Australian form and Lundblad 'validated' Kirkaldy's var *sappho* by identifying part of the type series of *malayana* as *sappho*, Kirkaldy's name takes priority over Hale's name var *atavia* which is the macropterous form of *sappho*.

Hutchinson (1929) used the term 'form *sappho*' for brachypterous females of *limpida* sensu Hutchinson from southern Africa which had a black spot on the eytra, he commented on the variation in the size and density of the mark. The parallel occurrence of colour variants in *Nychia* species makes the application of varietal or form names unwise and potentially confusing.

Data available for Australia at present shows that the brachypterous female with the black spot only occurs in what appears to be totally brachypterous populations. No brachypterous males have so far been found with this mark.

The slender data suggests that *Nychia* is widely distributed across 'northern' Australia and occurs in both lentic and lotic habitats.

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